

CLAIMS

What is claimed is:

1. An air bearing slider of a disk drive for moving a read/write head to a desired position on a disk by being lifted above a surface of the disk, the air bearing slider comprising:
 - a body having a surface facing the disk;
 - a first rail base protruding from the surface of the body facing the disk and having a U shape open to a trailing end portion of the body;
 - a first positive pressure generating rail portion protruding from the first rail base and including a cross rail separated from a leading end portion of the first rail base and extending in a first direction perpendicular to a direction in which air enters and a pair of side rails respectively extending from both end portions of the cross rail in a second direction parallel to the direction in which air enters;
 - a negative pressure cavity defined by the first rail base;
 - a second rail base protruding from the surface of the body facing the disk adjacent to the trailing end portion of the body;
 - a second positive pressure generating rail portion protruding from the second rail base;
 - and
 - a negative pressure generating pocket formed in each of the side rails to be separated from the negative pressure cavity and open to an outside of the side rails.
2. The air bearing slider as claimed in claim 1, wherein the negative pressure generating pocket is formed shallower than the negative pressure cavity.
3. The air bearing slider as claimed in claim 2, wherein a bottom surface of the negative pressure generating pocket is formed to have a same height of an upper surface of the first rail base.
4. The air bearing slider as claimed in claim 1, wherein the negative pressure generating pocket is formed in a lengthwise direction of the side rails.

5. The air bearing slider as claimed in claim 1, wherein the negative pressure generating pocket is open to the outside of the side rails through an open portion and a length of the open portion is shorter than a length of the negative pressure generating pocket.

6. The air bearing slider as claimed in claim 1, wherein the first rail base and the second rail base are formed to have a same height.

7. The air bearing slider as claimed in claim 6, wherein a step between the first rail base and the first positive pressure generating rail portion and a step between the second rail base and the second positive pressure generating rail portion have a same height.

8. The air bearing slider as claimed in claim 1, wherein a groove connecting the negative pressure generating pocket and the negative pressure cavity is formed in each of the side rails between the negative pressure generating pocket and the negative pressure cavity.

9. The air bearing slider as claimed in claim 8, wherein a depth of the groove connecting the negative pressure generating pocket and the negative pressure cavity is the same as a depth of the negative pressure generating pocket.

10. The air bearing slider as claimed in claim 8, wherein a length of the groove is shorter than a length of the negative pressure generating pocket.

11. The air bearing slider as claimed in claim 1, wherein a third positive pressure generating rail portion protruding on the first rail base is provided at the rear of each of the side rails and the third positive pressure generating rail portion is separated from each of the side rails.

12. The air bearing slider as claimed in claim 11, wherein the third positive pressure generating rail portion is formed on an upper surface of the first rail base to have a same height as the first positive pressure generating rail portion.

13. The air bearing slider as claimed in claim 1, wherein the first rail base protrudes between 1 to 1.5 μ m from the body surface.

14. The air bearing slider as claimed in claim 1, wherein the first positive pressure generating rail portion protrudes between 0.1 to 0.2 μm from an upper surface of the first rail base.

15. The air bearing slider as claimed in claim 1, wherein the second rail base portion protrudes between 1 to 1.5 μm from the body source.

16. The air bearing slider as claimed in claim 1, wherein the second positive pressure generating rail portion protrudes between 0.1 to 0.2 μm from an upper surface of the second rail base.

17. A hard disk drive comprising:
a hard disk;
a spindle motor rotating the hard disk;
a read/write head recording data onto the hard disk or reproducing data from the hard disk; and
an actuator moving the read/write head to a predetermined position on the hard disk, the actuator further comprising an actuator arm rotated by a voice coil motor, an air bearing slider where the read/write head is mounted, and a suspension installed at one end portion of the actuator arm and supporting the air bearing slider elastically biased toward a surface of the hard disk, wherein the air bearing slider comprises:
a body having a surface facing the hard disk,
a first rail base protruding from the surface of the body facing the hard disk and having an opening extending from a trailing end portion of the body to a midsection of the body,
a first positive pressure generating rail portion protruding from the first rail base and including a cross rail separated from a leading end portion of the first rail base and extending in a first direction perpendicular to a direction in which air enters and a pair of side rails extending from both ends portion of the cross rail in a second direction parallel to the direction in which air enters,
a negative pressure cavity defined by the first rail base,
a second rail base protruding from the surface of the body facing the disk adjacent to the trailing end portion of the body,

a second positive pressure generating rail portion protruding from the second rail base, and

a negative pressure generating pocket formed in each of the side rails to be separated from the negative pressure cavity and open to an outside of the side rails.

18. A method of forming an air bearing slider of a disk drive for moving a read/write head to a desired position on a disk, the method comprising:

forming a body having a surface facing the disk;

forming a first rail base protruding from the surface of the body facing the disk, the first rail comprising an open area extending along a trailing end portion of the body to a midsection of the body;

forming a first positive pressure generating rail portion protruding from the first rail base and including a cross rail separated from a leading end portion of the first rail base and extending in a first direction perpendicular to a direction in which air enters and a pair of side rails extending from both end portions of the cross rail in a second direction parallel to the direction in which air enters;

forming a negative pressure cavity defined by the first rail base;

forming a second rail base protruding from the surface of the body facing the disk adjacent to the trailing end portion of the body;

forming a second positive pressure generating rail portion protruding from the second rail base; and

forming a negative pressure generating pocket formed in each of the side rails to be separated from the negative pressure cavity and open to an outside of the side rails.

19. An air bearing slider of a disk drive for moving a read/write head to a desired position on a disk, the air bearing slider comprising:

a body having a surface facing the disk;

a first rail base protruding from the surface of the body facing the disk comprising an open area extending along a trailing end portion of the body to a midsection of the body;

a first positive pressure generating rail portion protruding from the first rail base and including a cross rail separated from a leading end portion of the first rail base and extending in a first direction perpendicular to a direction in which air enters and a pair of side rails extending from both end portions of the cross rail in a second direction parallel to the direction in which air enters;

a negative pressure cavity defined by the first rail base;

a second rail base protruding from the surface of the body facing the disk adjacent to the trailing end portion of the body;

a second positive pressure generating rail portion protruding from the second rail base;
and

a negative pressure generating pocket formed in each of the side rails to be separated from the negative pressure cavity and open to an outside of the side rails.

20. The air bearing slider of a disk drive according to claim 19, further comprising a third positive pressure generating rail portion generating positive pressure at the trailing end portion of the body.